

REMARKS/ARGUMENTS

Reconsideration of the application is respectfully requested.

Status of Claims

Claims 1, 2 and 4-27 are pending in the application, with claim 1 being the only independent claim and claims 4-13 and 20-22 being withdrawn from consideration. Claims 1, 4-9, 11-14, 21 and 22 have been amended.

Overview of the Office Action

Claims 1, 2, 14-19 and 23-27 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,494,955 (*Lei*).

Claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,001,183 (*Gurary*).

Claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary* in view of *Lei*.

Claims 24 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary* or *Lei* in view of U.S. Patent No. 6,063,203 (*Satoh*).

Claim 27 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary* or *Lei* in view of U.S. Patent No. 6,454,865 (*Goodman*).

Amendments Addressing the 35 U.S.C. 112 Rejection

Claims 1, 2, 14-19 and 23-27 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because it is alleged that the added wording “at least four steps” in claims 1 and 14 introduces new matter.

Claims 1 and 14 have been amended to eliminate the wording “at least four steps”. In view of this amendment, withdrawal of the rejection of claims 1, 2, 14-19 and 23-27 under 35 U.S.C. 112, first paragraph, is respectfully requested.

Summary of Subject Matter Disclosed in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The present specification discloses a substrate holder 1 for a facility for epitaxial deposition of semiconductor material on a substrate 2. The substrate holder 1 includes a substrate supporting face having a support step 5, a holder rear face, which faces away from the substrate supporting face, and a temperature equalization structure which results in a defined temperature profile over the entire substrate surface of the substrate 2. The substrate 2 is located on or in the vicinity of the substrate holder 1 during the epitaxial deposition. *See* Figs. 8A and 8B; and paragraphs [0008], [0042] and [0043] of the specification.

The temperature equalization structure comprises a stepped relief which is formed on the substrate supporting face of the substrate holder 1. The support step 5 is configured to support the substrate 2 so that a bottom surface of the substrate 2 is disposed lower than an edge area of

the substrate holder and a top surface of the substrate 2 is disposed higher than said edge area. See Figs. 6C, 8A and 8B; and paragraphs [0017], [0040], [0042] and [0043] of the specification.

Allowability of the Claims

Independent Claim 1

35 U.S.C. 102(e) Rejection:

Independent claim 1 has been amended to recite, *inter alia*, the following:

“wherein the support step is configured to support the substrate so that a bottom surface of the substrate is disposed lower than an edge area of the substrate holder and a top surface of the substrate is disposed higher than said edge area” (emphasis added).

Support for this amendment can be found, for example, in Figs. 6C, 8A and 8B, and paragraphs [0040] and [0042] of the specification.

Applicants respectfully submit that amended claim 1 is not anticipated by *Lei* because *Lei* fails to disclose, either expressly or inherently, each and every element as set forth in amended claim 1. In particular, *Lei* fails to disclose the above-quoted limitations of amended claim 1.

Lei relates to a substrate support assembly 138 which has a substrate support 202 and a stem 204. The substrate support 202 includes an upper plate 208 and a lower plate 210 which supports the upper plate 208. The upper plate 208 supports a substrate 140 during processing. More specifically, the upper plate 208 includes a support surface 216 having a seal ring 218 which is used to support the substrate 140, and a stepped surface 220 which is disposed radially inside the seal ring 218. A shadow ring 258 is supported by the lower plate 210. See Fig. 2A, col. 3, lines 38-63, and col. 6, lines 38-42 of *Lei*.

Since the substrate 140 is placed directly on the seal ring 218 of the upper plate 208, the bottom surface of the substrate 140 is disposed coplanar with the seal ring 218. Thus, if the top

of the seal ring 218 of the upper plate 208 in *Lei* is considered to be the edge area of the substrate support 202; the substrate is arranged above the edge area. Moreover, it is noted that in *Lei* the top surface of the substrate 140 is disposed lower than the top surface 262 of the shadow ring 258 (*see* Fig. 2A of *Lei*). If the top surface 262 of *Lei* is considered to be the edge area of the substrate support 202, the substrate is below the edge area. Therefore, *Lei* fails to disclose or teach a substrate holder having a support step, wherein the support step is configured to support the substrate so that a bottom surface of the substrate is disposed lower than an edge area of the substrate holder and a top surface of the substrate is disposed higher than said edge area, as now expressly recited in amended claim 1 of the present application.

In view of the difference, withdrawal of the 35 U.S.C. 102(e) rejection of claim 1 is respectfully requested.

35 U.S.C. 103(a) Rejection as Unpatentable over Gurary:

Amended claim 1 is also patentable over *Gurary* because *Gurary* fails to teach or suggest the above-quoted limitations of amended claim 1.

Gurary relates to a wafer carrier. More specifically, the wafer carrier 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300 of *Gurary* is intended to be used with a conventional susceptor 110 in an epitaxial growth process (*see* Figs. 1-16 and col. 1, lines 9-15 of *Gurary*). Fourteen embodiments are disclosed in *Gurary* (*see* col. 4, line 24 to col. 5, line 45 of *Gurary*), and *Gurary* systematically discusses these embodiments in detail one by one (*see* col. 5, line 54 to col. 15, line 14 of *Gurary*).

However, in each of these embodiments, when a substrate wafer 140 is disposed in the wafer pocket 134, 234, 334, 434, 534, 634, 734, 834, 934, 1034, 1134, 1234, 1334, the top

surface of the substrate wafer 140 is positioned no higher than an edge area of the wafer carrier 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300 (*see* Figs. 1-16 of *Gurary*). Therefore, *Gurary* also fails to disclose or teach a substrate holder having a support step, wherein the support step is configured to support the substrate so that a bottom surface of the substrate is disposed lower than an edge area of the substrate holder and a top surface of the substrate is disposed higher than said edge area, as now expressly recited in amended claim 1.

Gurary actually teaches away from positioning the top surface of a substrate higher than an edge area of a substrate holder because *Gurary* explicitly teaches that the wafer pocket typically has a depth which is about 0.002 inches deeper than the thickness of the wafer (*see* col. 1, lines 60-63 of *Gurary*). Thus, *Gurary* also fails to suggest the above-quoted limitations of amended claim 1.

In view of the foregoing, withdrawal of the 35 U.S.C. 103 rejection of claim 1 as being unpatentable over *Gurary* is respectfully requested.

35 U.S.C. 103(a) Rejection as Unpatentable over Gurary in view of Lei:

Applicants respectfully submit that amended claim 1 is also patentable over *Gurary* in view of *Lei* because, as discussed in detail above, neither *Gurary* nor *Lei* teaches or suggests a substrate holder having a support step, wherein the support step is configured to support the substrate so that (1) "a bottom surface of the substrate is disposed lower than an edge area of the substrate holder" and (2) "a top surface of the substrate is disposed higher than said edge area", as now recited in amended claim 1. Therefore, withdrawal of the 35 U.S.C. 103 rejection of claim 1 as being unpatentable over *Gurary* in view of *Lei* is deemed in order.

Dependent Claims 2, 14-19 and 23-27

Claims 2, 14-19 and 23-27 depend, either directly or indirectly, from independent claim 1 and, thus, each is deemed allowable therewith.

In addition, these claims include features which serve to still further distinguish the claimed invention over the prior art of record.


Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect, and early passing of this application to issue, are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, he is respectfully requested to telephone the undersigned in order to facilitate early resolution of any outstanding issues.

Respectfully submitted,

COHEN PONTANI LIEBERMAN & PAVANE LLP

By 
Alfred W. Froebrich
Reg. No. 38,887
551 Fifth Avenue, Suite 1210
New York, New York 10176
(212) 687-2770

Dated: June 1, 2007